

IN THE CLAIMS

Please cancel claims 3 and 17, without prejudice or disclaimer.

Please amend the claims to read as follows:

Listing of Claims

1. (Previously Amended) A resin molded type semiconductor device comprising:

a semiconductor chip which is mounted on a die pad of a lead frame;

thin metal wires which electrically connect terminals of an upper face of said semiconductor chip to inner lead portions of the lead frame;

a sealing resin which seals an outer peripheral region of said semiconductor chip, said region including a thin metal wire region of the upper face of said semiconductor chip, and a lower region of said die pad; and

outer lead portions which are arranged in a bottom face region of said sealing resin,

wherein said lead frame is subjected to an upsetting process so that said die pad is located at a position higher than said inner lead portions and at least a portion of the outer periphery of the semiconductor chip extends outward from the outer periphery of said die pad.

2. (Previously Amended) A resin molded type semiconductor device comprising:

a semiconductor chip which is mounted on a die pad of a lead frame;

thin metal wires which electrically connect terminals of an upper face of said semiconductor chip to inner lead portions of said lead frame;

a sealing resin which seals an outer peripheral region of said semiconductor chip, said region including a thin metal wire region of the upper face of said semiconductor chip; and

outer lead portions which are arranged in a bottom face region of said sealing resin and which are formed to be continuous to respective inner lead portions,

wherein at least one groove portion is formed in a surface of each of said inner lead portions and at least a portion of the outer periphery of the semiconductor chip extends outward from the outer periphery of said die pad.

3. (Canceled).

4. (Currently Amended) A resin molded type semiconductor device comprising:

a semiconductor chip which is mounted on a die pad of a lead frame;

thin metal wires which electrically connect terminals of an

upper face of said semiconductor chip to inner lead portions of said lead frame;

a sealing resin which seals an outer peripheral region of said semiconductor chip and which contacts a bottom face of said semiconductor chip, said region including a thin metal wire region of the upper face of said semiconductor chip; and

outer lead portions which are arranged in a bottom face region of said sealing resin and which are formed to be continuous to respective inner lead portions,

wherein a widened portion is formed in each of said inner lead portions.

5. (Previously Amended) A resin molded type semiconductor device comprising:

a semiconductor chip which is mounted on a die pad of a lead frame;

thin metal wires which electrically connect terminals of an upper face of said semiconductor chip to inner lead portions of said lead frame;

a sealing resin which seals an outer peripheral region of said semiconductor chip and which contacts a bottom face of said semiconductor chip, said region including a thin metal wire region of the upper face of said semiconductor chip; and

outer lead portions which are arranged in a bottom face

region of said sealing resin and which are formed to be continuous to respective inner lead portions,

wherein a widened portion is formed in each of said inner lead portions and at least one groove portion is formed in a surface of each of said inner lead portions.

6. (Previously Amended) A resin molded type semiconductor device comprising:

a semiconductor chip which is mounted on a die pad of a lead frame;

thin metal wires which electrically connect terminals of an upper face of said semiconductor chip to inner lead portions of said lead frame;

a sealing resin which seals an outer peripheral region of said semiconductor chip, said region including a thin metal wire region of the upper face of said semiconductor chip; and

outer lead portions which are arranged in a bottom face region of said sealing resin and which are formed to be continuous to respective inner lead portions, and

a widened portion is formed in each of said inner lead portions,

at least one groove portion is formed in a surface of each of said inner lead portions,

a connecting portion of each of said thin metal wires is

coupled to a respective inner lead portion at a surface region of said respective inner lead portion adjacent said at least one groove portion.

7. A resin molded type semiconductor device according to claim 1, wherein exposed faces of said outer lead portion are arranged in a same level as an outer face of said sealing resin.

8. (Previously Amended) A method of manufacturing a resin molded type semiconductor device, said method comprising the steps of:

performing an upsetting process on a lead frame so that a die pad of said lead frame is located at a position higher than inner lead portions of said lead frame;

bonding a semiconductor chip to said die pad portion of said lead frame,

wherein at least a portion of the outer periphery of the semiconductor chip extends outward from the outer periphery of said die pad;

electrically connecting terminals of said semiconductor chip to said inner lead portions of said lead frame by thin metal wires;

sealing an outer peripheral region of said semiconductor chip, thereby forming a sealing resin, said region including a region of an upper face of said semiconductor chip that is

electrically connected by said thin metal wires, and a lower region of said die pad portion; and

shaping outer lead portions of the lead frame so as to be exposed from an outer face of said sealing resin.

9. (Previously Amended) A method of manufacturing a resin molded type semiconductor device, said method comprising the steps of:

bonding a semiconductor chip to a lead frame having inner lead portions in each of which a widened portion is disposed and having a flat surface in which at least one groove portion is formed;

electrically connecting terminals of said semiconductor chip to said inner lead portions of said lead frame by thin metal wires;

sealing an outer peripheral region of said semiconductor chip, thereby forming a sealing resin, said region including a region of an upper face of said semiconductor chip and electrically connected by said thin metal wires, and a lower region of said semiconductor chip; and shaping outer lead portions of said lead frame so as to be exposed from an outer face of said sealing resin, and, when said terminals of said semiconductor chip are to be electrically connected to said inner lead portions by said thin metal wires, the connection is

performed while connecting portions of said thin metal wires on the side of said inner lead portions are disposed at the flat surface adjacent said at least one groove portion.

10. (Previously Amended) A method of manufacturing a resin molded type semiconductor device, said method comprising the steps of:

bonding a semiconductor chip to a lead frame having inner lead portions in each of which a widened portion is disposed and at least one groove portion is formed;

electrically connecting terminals of said semiconductor chip to said inner lead portions of said lead frame by thin metal wires;

sealing an outer peripheral region of said semiconductor chip, thereby forming a sealing resin, said region including a region of an upper face of said semiconductor chip and

electrically connected by said thin metal wires, and a lower region of said semiconductor chip; and

shaping outer lead portions of said lead frame so as to be exposed from an outer face of said sealing resin, and, when said terminals of said semiconductor chip are to be electrically connected to said inner lead portions by said thin metal wires, the connection is performed while connecting portions of said thin metal wires are coupled to respective inner lead portions at

a flat surface region of said respective inner lead portion adjacent at least one groove portion.

11. (Original) A resin molded type semiconductor device according to claim 2, wherein exposed faces of said outer lead portion are arranged in a same level as an outer face of said sealing resin.

12. (Canceled).

13. (Original) A resin molded type semiconductor device according to claim 4, wherein exposed faces of said outer lead portion are arranged in a same level as an outer face of said sealing resin.

14. (Original) A resin molded type semiconductor device according to claim 5, wherein exposed faces of said outer lead portion are arranged in a same level as an outer face of said sealing resin.

15. (Original) A resin molded type semiconductor device according to claim 6, wherein exposed faces of said outer lead portion are arranged in a same level as an outer face of said sealing resin.

16. (Presently Amended) A resin molded type semiconductor device according to claim 3 2, wherein said respective inner lead portion includes a flat surface region adjacent said at least one



groove portion and said at least one groove is portion comprises a plurality of grooves which define a contact portion therebetween, said flat surface region being located on said contact portion.

17. (Canceled).

18. (Previously Presented) A resin molded type semiconductor device according to claim 4, wherein at least one groove portion is formed in a surface of each of said inner lead portions.

19. (Previously Presented) A resin molded type semiconductor device according to claim 6, wherein said surface region is flat.

20. (Previously Presented) A resin molded type semiconductor device according to claim 6, wherein said at least one groove is a plurality of grooves which define a contact portion therebetween, said flat surface region located on said contact portion.

21. (Previously Presented) A method of manufacturing a resin molded type semiconductor device according to claim 10, wherein said at least one groove is a plurality of grooves which define a contact portion therebetween, said flat surface region located on said contact portion.

22. (Previously Presented) A resin molded type semiconductor device according to claim 1, wherein the entire outer periphery of the semiconductor chip extends outward from the outer periphery of said die pad.

23. (Previously Presented) A resin molded type semiconductor device according to claim 2, wherein the entire outer periphery of

the semiconductor chip extends outward from the outer periphery of said die pad.

24. (Previously Presented) A method of manufacturing a resin molded type semiconductor device according to claim 8, wherein the entire outer periphery of the semiconductor chip extends outward from the outer periphery of said die pad.

25. (Previously Presented) A resin molded type semiconductor device according to claim 1, wherein said die pad is smaller in size than said semiconductor chip.

26. (Previously Presented) A resin molded type semiconductor device according to claim 2, wherein said die pad is smaller in size than said semiconductor chip.

27. (Previously Presented) A method of manufacturing a resin molded type semiconductor device according to claim 8, wherein said die pad is smaller in size than said semiconductor chip.

28. (Previously Presented) A resin molded type semiconductor device according to claim 1, wherein said die pad is smaller in area than said semiconductor chip.

29. (Previously Presented) A resin molded type semiconductor device according to claim 2, wherein said die pad is smaller in area than said semiconductor chip.

30. (Previously Presented) A method of manufacturing a resin molded type semiconductor device according to claim 8, wherein said die pad is smaller in area than said semiconductor chip.

31. (New) A resin molded type semiconductor device comprising:

a lead frame comprising a die pad and leads including inner lead portions and outer lead portions;

each of the inner lead portions including at least one groove portion which is formed in a surface thereof;

a semiconductor chip mounted on said die pad;

said die pad being disposed higher than an upper face of said inner lead portions;

thin metal wires which electrically connect terminals of said semiconductor chip to said inner lead portions at a position not on top of said groove;

a sealing resin which seals an outer peripheral region of said semiconductor chip and an entire upper region of the said inner lead portions and outer lead portions, said outer peripheral region including a region of said thin metal wires and a lower region of said die pad; and

wherein said sealing resin leaves a an entire bottom surface of said inner lead portions unsealed.

32. (New) A resin molded type semiconductor device according to claim 31, wherein at least a portion of the said outer periphery of the said semiconductor chip extends outward from the said outer periphery of said die pad.

33. (New) A resin molded type semiconductor device according

to claim 31, wherein said at least one groove portion receives said sealing resin therein.

34. (New) A resin molded type semiconductor device according to claim 31, wherein a total thickness is not greater than a sum of a thickness of said semiconductor chip and 1 mm.

35. (New) The resin molded type semiconductor device according to claim 31, wherein exposed faces of said outer lead portions are arranged in a same plane as an outer face of said sealing resin.

36. (New) The resin molded type semiconductor device according to claim 31, wherein said at least one groove portion absorbs stress at a connection between said thin metal wires and said inner lead portions.